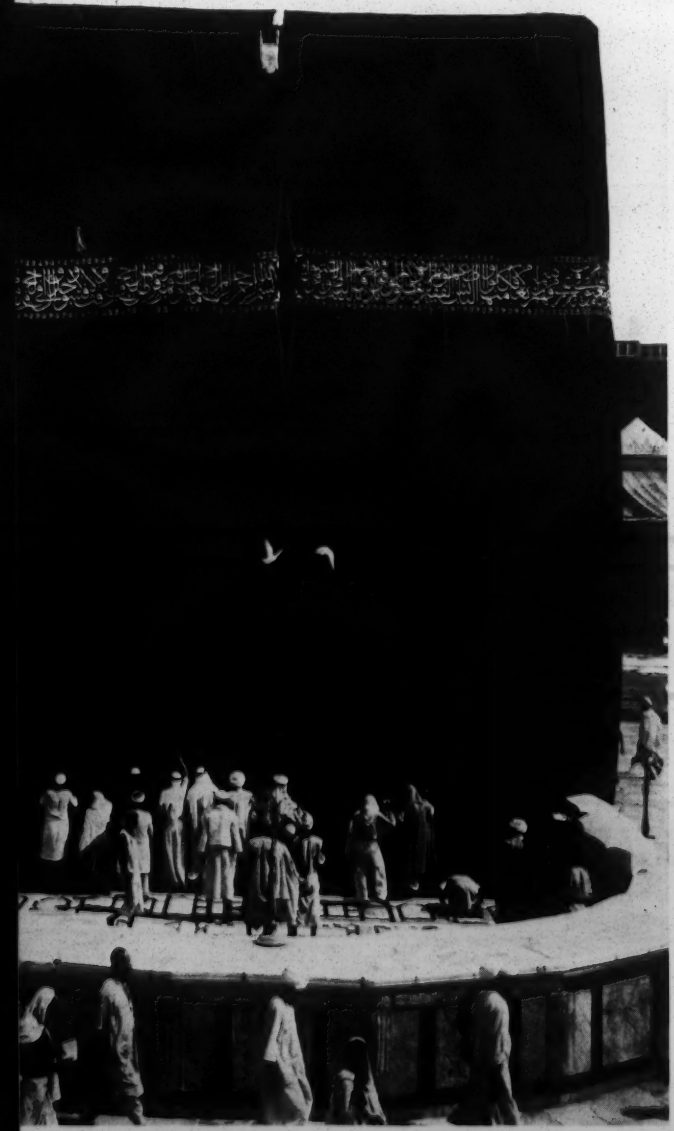
GEOGRAPHIC SCHOOL BULLETINS

THE NATIONAL GEOGRAPHIC SOCIETY, WASHINGTON 6, D.C.

VOLUME 37, NUMBER 13, JANUARY 12, 1959 . . . *To Know This World, Its Life*



ABDUL GHAFUR SHEIKH

- Holy Mecca
- Metric Measure
- Refugees Settle Mekong Delta
- Underwater Sulphur Mine
- Olympic Park

GREAT BLACK KAABA, center of the world for Moslem millions, stands in the Holy City of Mecca. Each year pilgrims gather from around the world to fulfill one of the five basic requirements of their religion. The other four: to observe the feast of Ramadan; to recite the belief that "There is no god but God, and Mohammed is His Prophet"; to pray facing the Kaaba five times a day; to give to the poor one-fortieth of one's wealth.

UMI

HERE AM I, O God, at Thy command! No equal hast Thou, here am I.

Walking from their motorized magic carpet (top), umbrella-shaded pilgrims voice the traditional cry.

They have come to Mecca, site of the Kaaba (above), the black stone cube that is the center of the Moslem world. They believe that Abraham erected the Kaaba at the express command of God.

Toward this building some 421,000,000 Moslems turn five times a day to pray. The Koran (their Bible) enjoins:

"Verily, the first house founded for mankind to worship in is surely at Mecca, a blessing and a guidance to the worlds."

Coming here in person, after bending thought and prayer toward it for a lifetime, is the culminating experience of a Moslem's religious life. The pilgrimage is called the *hadj*. One who completes it and the prescribed rituals receives the title *hadji*.

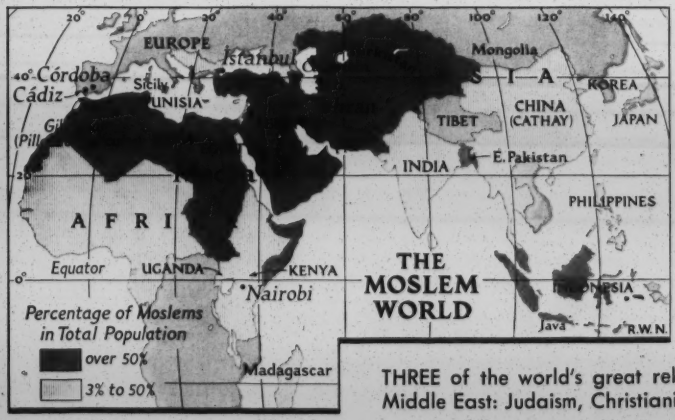
From every land, by every route, come the faithful; driblets and droplets of humanity trickling down from the distant mountains and far-off ancient cities until over the whole scope of Islam the stream becomes a river, the river a flood.

Some trudge the dusty roads of central Asia, walking a year or more to reach the House of God. Others swelter in freighters and tramp steamers on the slow passage from South America or the green islands of Indonesia. Airplanes whisk the more fortunate to the holy of holies.

The center of their devotions is a square rock building garbed in rich black draperies embroidered in gold with verses from the Koran.

Inside the gold and silver door is a bare room, dimly lit by lamps of precious metal. Some pilgrims are so exalted by walking into the House of God they vow never to let their unsandaled feet touch the common earth again.

Near Mecca stands the Mount of Mercy. There, Moslem legend relates, Adam met Eve after their expulsion from the Garden of Eden. Ceremonies at the Mount



EXACT FIGURES are unobtainable, but estimates place leading religions in this order:

Christian
836,000,000

Moslem
421,000,000

Hindu
322,000,000

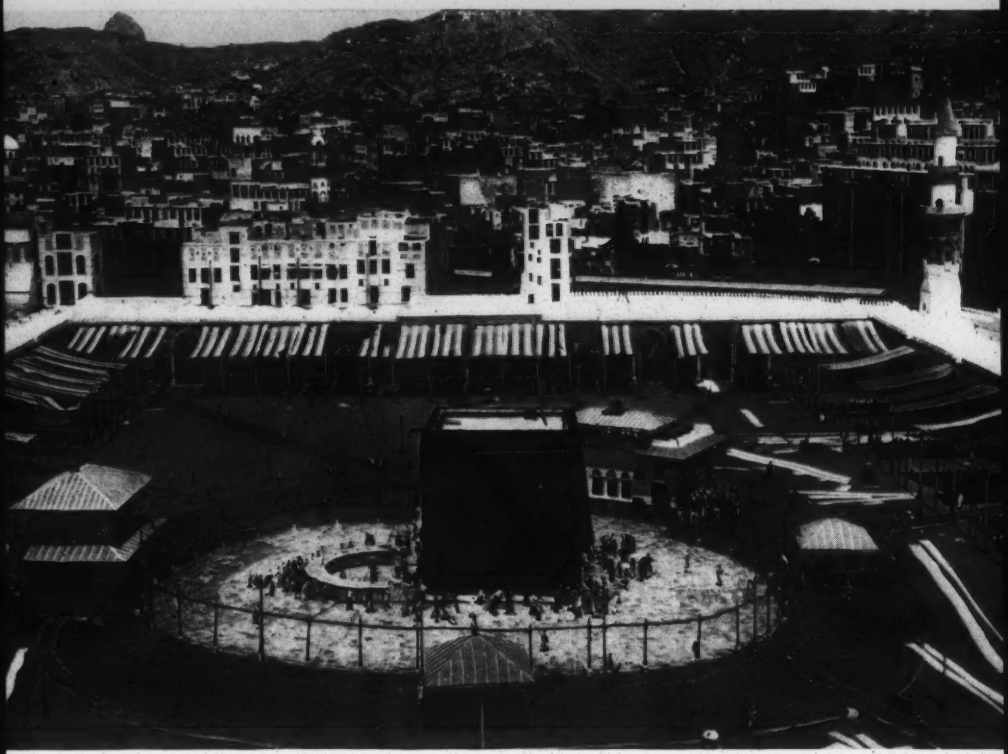
Confucian
301,000,000

THREE of the world's great religions sprang from the Middle East: Judaism, Christianity, and Islam (Moslem).

© NGS

ALL PHOTOGRAPHS BY ABDUL GHAFUR SHEIKH

The Hadj to Holy Mecca



GEOGRAPHIC SCHOOL BULLETINS, copyright © 1959 by the National Geographic Society, Melville Bell Grosvenor President. Published weekly during school months by the School Service Division, Ralph Gray, Chief. Assts.: Arthur P. Miller, Jr., Frank Sartwell, Katherine Crapster, Edward Schulz. Entered as second class matter, Wash., D.C. International copyright. All rights reserved. Rates: United States, $2.00 for 30 issues (one school year); Canada, $2.25; elsewhere, $2.50. U. S. only, three years (90 issues) for $5.00. The National Geographic Society is a nonprofit educational and scientific society established for the increase and diffusion of geographic knowledge.

HERE AM I, O God, at Thy command! No equal hast Thou, here am I.

Walking from their motorized magic carpet (top), umbrella-shaded pilgrims voice the traditional cry.

They have come to Mecca, site of the Kaaba (above), the black stone cube that is the center of the Moslem world. They believe that Abraham erected the Kaaba at the express command of God.

Toward this building some 421,000,000 Moslems turn five times a day to pray. The Koran (their Bible) enjoins:

"Verily, the first house founded for mankind to worship in is surely at Mecca, a blessing and a guidance to the worlds."

Coming here in person, after bending thought and prayer toward it for a lifetime, is the culminating experience of a Moslem's religious life. The pilgrimage is called the *hadj*. One who completes it and the prescribed rituals receives the title *hadji*.

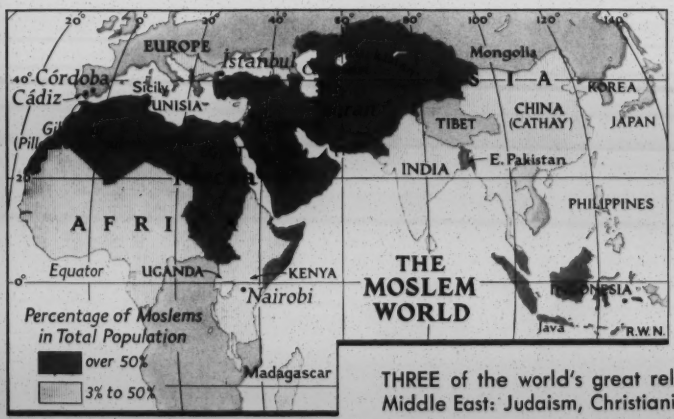
From every land, by every route, come the faithful; driblets and droplets of humanity trickling down from the distant mountains and far-off ancient cities until over the whole scope of Islam the stream becomes a river, the river a flood.

Some trudge the dusty roads of central Asia, walking a year or more to reach the House of God. Others swelter in freighters and tramp steamers on the slow passage from South America or the green islands of Indonesia. Airplanes whisk the more fortunate to the holy of holies.

The center of their devotions is a square rock building garbed in rich black draperies embroidered in gold with verses from the Koran.

Inside the gold and silver door is a bare room, dimly lit by lamps of precious metal. Some pilgrims are so exalted by walking into the House of God they vow never to let their unsandaled feet touch the common earth again.

Near Mecca stands the Mount of Mercy. There, Moslem legend relates, Adam met Eve after their expulsion from the Garden of Eden. Ceremonies at the Mount



EXACT FIGURES are unobtainable, but estimates place leading religions in this order:

Christian
836,000,000

Moslem
421,000,000

Hindu
322,000,000

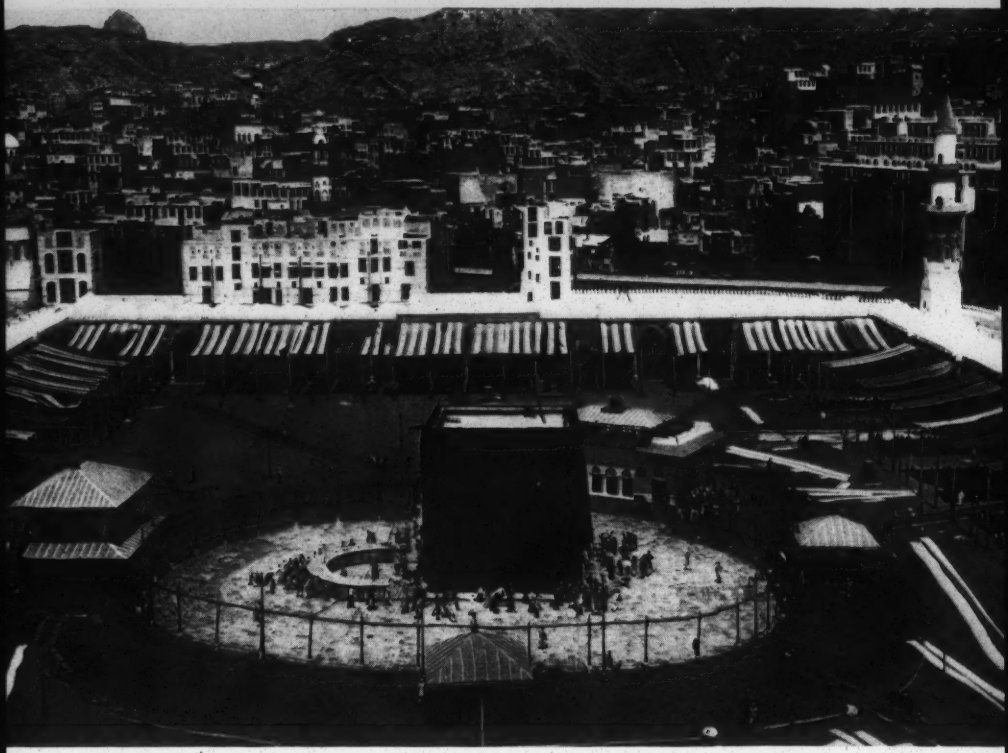
Confucian
301,000,000

THREE of the world's great religions sprang from the Middle East: Judaism, Christianity, and Islam (Moslem).

© NGS

ALL PHOTOGRAPHS BY ABDUL GHAFUR SHEIKH

The Hadj to Holy Mecca



GEOGRAPHIC SCHOOL BULLETINS, copyright © 1959 by the National Geographic Society, Melville Bell Grosvenor President. Published weekly during school months by the School Service Division, Ralph Gray, Chief. Assts.: Arthur P. Miller, Jr., Frank Sartwell, Katherine Crapster, Edward Schulz. Entered as second class matter, Wash., D.C. International copyright. All rights reserved. Rates: United States, $2.00 for 30 issues (one school year); Canada, $2.25; elsewhere, $2.50. U. S. only, three years (90 issues) for $5.00. The National Geographic Society is a nonprofit educational and scientific society established for the increase and diffusion of geographic knowledge.

INDIA AND JAPAN GO METRIC

Decimal System of Measurement Gains New Ground

IF the United States and Britain should convert to the metric system of weights and measures many sayings and quotations would lose their punch. "An ounce of prevention is worth a pound of cure" would read "28.35 grams of prevention are worth 453.59 grams of cure." "Miles to go before I sleep" would translate into "1.609 kilometers." "God's Little Acre" would be "God's Little 0.405 Hectare."

Otherwise the world might be better off if everybody used the same measure of length, weight, volume, and area.

India's nearly 400,000,000 people are now changing to the metric system. Gradually they will give up the British yard, pound, and gallon. These will be replaced by the decimal scale of meters, grams, and liters. Japan previously made the change.

In adopting the metric way, they have joined most of the world in a system that developed in France during the Revolution. The Paris Academy of Sciences was delegated to bring order to the chaos of international weights and measures. In 1791, it proposed the meter, gram, and liter as basic standards of length, weight, and volume. Each was given a specific value and place in a decimal system.

The meter was set in accord with what was then believed to be 1/10,000,000 the distance from Equator to Pole. In United States terms, this has since been defined as equivalent to 39.37 inches.

When multiplied by 1,000 the meter becomes the 39,370-inch kilometer, or about 5/8 mile. Divided by 1,000 it is the millimeter, about 1/25 inch. And so on, simply by moving decimal points.

All scientists, even in the United Kingdom and the United States, long have computed by the metric scale.

Back in 1906, a bill was introduced in the United States Congress to require metric calculations in government business. Dr. Alexander Graham Bell, distinguished scientist and inventor of the telephone, spoke in its favor. He stressed the tediousness of converting inches, feet, and yards, and dealing with different kinds of bushels and ounces. "We already have a decimal system of money," he said. "We would not, if we could, go back to the pounds, shillings, and pence of our ancestors."

Many measures still used by English-speaking nations grew out of Egyptian, Roman, and Greek gauges based on the human hand, finger, or foot.

The Egyptian cubit was the distance between the elbow and middle finger tip. King Henry I, in medieval England, made the legal "cloth yard" the span between his royal nose and thumb.

Now Englishmen and Americans mean different things when they speak of tons and gallons. A British ton is 2,240 pounds. The common American ton is the short ton of 2,000 pounds. British gallons and bushels are larger than American.

Minute differences of no consequence in every-day life take on surprising significance as scientists reach into the universe and probe the atom nucleus. Before long it is expected the international meter will have almost infinitesimal divisions in terms of wave lengths of light.

BATTLE OF THE RULER

Where weights and measures are concerned, the world is divided into two major camps—one armed with a 36-inch yardstick, the other with a 39.37-inch meter. The British yardstick, at a disadvantage in many respects other than length, is gradually losing the centuries-long joust. Only the British Isles and countries settled or colonized by English-speaking peoples still use the British system. However, this adds up to a lot of the earth's surface, including such large countries as the United States, Canada, Pakistan, Australia, New Zealand, Union of South Africa, Nigeria, Burma, Malaya, and many other dependencies. India and Japan changed to the metric system in 1958, joining France and all of Europe, Russia, China, the Middle East, Latin America, and most of non-British Africa.

UMI

are a vital part of the hadj for pilgrims like the Yemenite (page 147), who raises umbrella and sandals and ecstatically states his faith: *La Ilaha Illa Allah!*—"There is no god but God!"

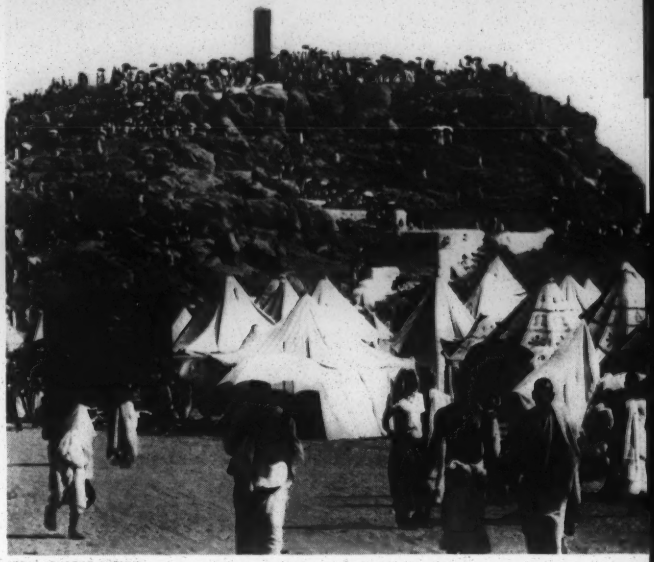
Long before the coming of the Prophet Mohammed, who redirected Moslem hearts from Jerusalem to Mecca, this town near the Red Sea had been a key point on the myrrh and frankincense trade routes. Spices and fruit from Yemen, ivory from Ethiopia, slaves from Egypt were brought here. Here, too, stood the images of the various gods worshipped by the tribes, and the strange building, the Kaaba, garlanded with legend.

Mohammed was born here more than 13 centuries ago. He smashed the idols, and founded Islam—literally "submission (to the will of God)."

Strongly opposed at first, the creed gathered followers and today exerts religious influence over a vast area of the earth.

When they reach their spiritual homeland, Moslems carry out a series of rites, beginning with the *tawaf*, a sevenfold circuit of the Kaaba, three laps trotting and four walking. The ritual circling of the Kaaba is repeated once during the hadj and again at its end.

After completing the seven circuits, the pilgrim runs between the near-by hills of Safa and Marwa. This commemorates the plight of Hagar, whom Abraham left thirsting in the desert with their son Ishmael. Rushing frantically from one spot to another, she searched for water until the angel Gabriel led her at last to a spring which bubbled up miraculously near the child's feet. Moslems believe this spring now feeds the well of Zemzem inside the Great Mosque that surrounds the Kaaba.



ABDUL GHAFUR SHEIKH

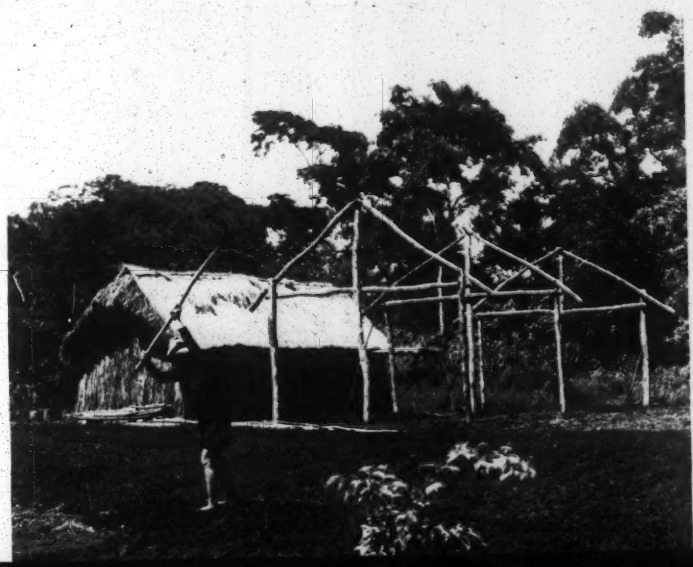
A central part of the hadj is the ceremony of the Standing, held on the plain of 'Arafa. "The best of prayers," the Prophet proclaimed, "is the prayer of the Day of 'Arafa."

The plain lies beneath the Mount of Mercy, some 14 miles from Mecca (above). On the ninth day of the Moslem month of Dhu 'l-Hijja, Mecca itself is a ghost town. All who can walk—and some who cannot—make their way to the plain.

When the sun sets, the pilgrims rush to gather pebbles. Each takes 63 to throw at three stone pillars in Mina, which mark the spots where Ishmael (in the Bible, Isaac) three times rebuked Satan. In remembrance, pilgrims spurn the Devil at Mina by casting stones.

The Prophet recommended this rite so his followers should learn that though each was weak and armed only with a pebble, together as brothers in Islam their collective strength was great. F.S.

NEARLY A MILLION North Vietnamese fled south when their land fell under the Communist shadow. To receive them, South Viet Nam created a checkerboard of waterways and tidy rice paddies. With generous help from the United States, 77,000 hectares were cleared. Existing irrigation and drainage canals were deepened, new ones dug. Dirt lifted from the canal bed raises thatch-roofed houses above flood level. One of the 100,000 new Cai San homesteaders (below) prepares part of his plot for a garden. Behind him stands the temporary house that serves until his permanent one takes shape on its wooden skeleton. U. S. aid also provided tools for craftsmen, including 200 sewing machines. Tailor (right), like the farmer, pays for equipment on easy credit terms.



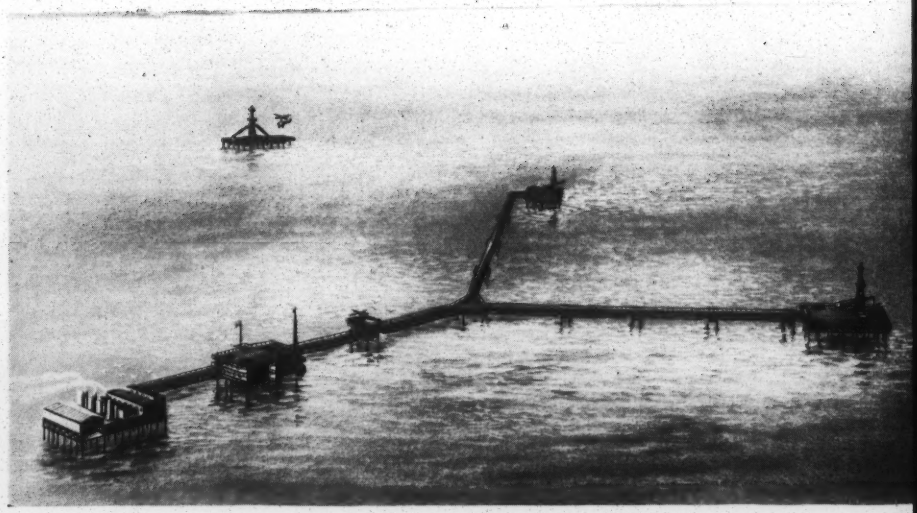
CANALS divert vital water from the mighty Mekong into Cai San's rice fields. When the rains come, fields are flooded and men and women labor beneath parasol hats, taking seedlings from the crowded seed bed and transplanting them throughout the paddy. Farmers cultivate growing rice with the faithful water buffalo, the tractor of the Far East. The dry season arrives, the water seeps out, and the crop is ready for harvest. These newly settled refugees are helping to make South Viet Nam's rice bowl—the Mekong Delta—once more one of Asia's most productive granaries. A. P. M.

Refugees Find A New Home

A resettlement project backed by the United States absorbs 100,000 Vietnamese at Cai San in the fruitful Mekong Delta.

BRIGHT-EYED at the sight of freedom, refugees from the Communist world of slave labor patiently wait better days. Soon, each family will occupy 4 hectares (about 10 acres) of fertile canal-side land. Already thousands are "at home" in their new locations, enjoying the free-world ideal of dignified family living—each man's thatch cottage his castle, each man's rice his own to eat or sell.

ALL PHOTOGRAPHS FROM INTERNATIONAL COOPERATION ADMINISTRATION



for 250 workmen. Its builder, the Freeport Sulphur Company, expects it to start producing next year.

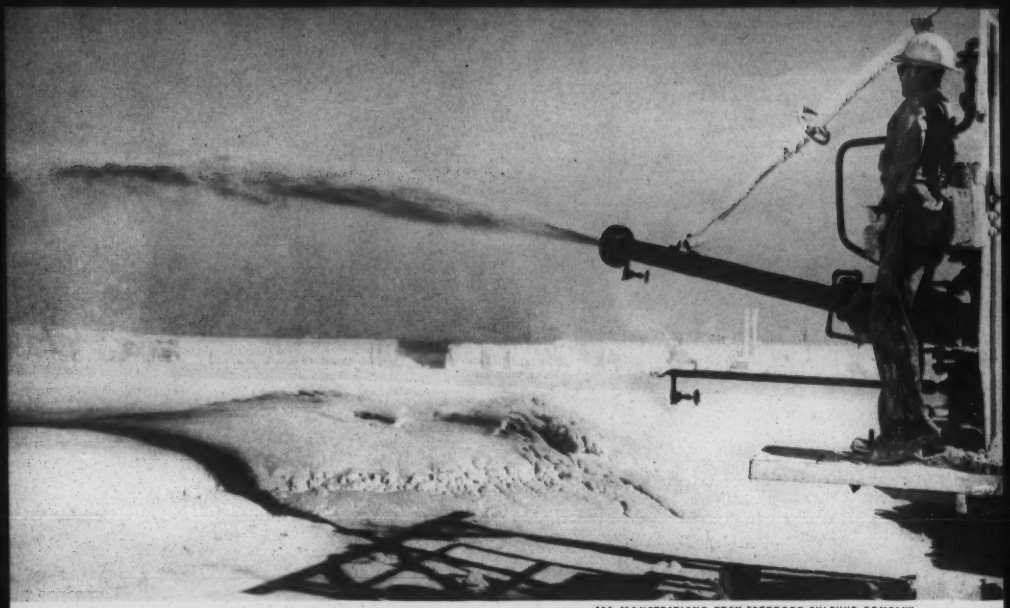
To gather the rich yellow mineral, sea water will be superheated, then pumped down to melt the sulphur beneath. Compressed air will be piped down to force the liquid up.

Getting supplies to the island will be a task for boats and helicopters (below).

Taking away the sulphur may involve one of two techniques. "Thermos-bottle" barges which hold heat and keep the sulphur liquid are already in use on Louisiana waterways. Such vessels could load from the island.

Another possibility involves construction of an undersea pipeline reaching seven miles to shore, with a hot-water jacket around it to keep the molten sulphur warm and flowing all the way. F.S.

UMI



ALL ILLUSTRATIONS FROM FREEPORT SULPHUR COMPANY

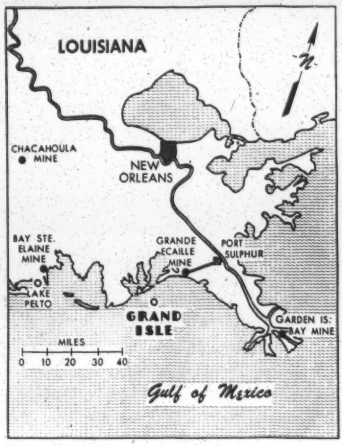
SULPHUR MINE UNDER THE SEA

LIQUID SULPHUR spews into storage in Louisiana, ready to be used in the manufacture of some 32,000 things, from toothpaste to steel.

It forms sulphuric acid, a liquid so important that its rate of consumption is a traditional barometer of a country's economy. Although you may never see any unless you peer into an automobile battery, your family, if it is close to average, indirectly uses some 800 pounds of the acid a year.

Among the common articles that contain sulphur are soap, printing inks, insecticides, bleaches, disinfectants, dyes, vitamin pills, and matches. Even in reading this page you are using sulphur. Light-sensitive sulphur compounds in your eyes allow you to see.

This important mineral is widely distributed through the earth's crust—but it is not easy to get. Usually, it is "married" to some other element, such as iron. Divorcing it is expensive. So miners hunt pure deposits.



For decades, mines on the island of Sicily held a near monopoly. In 1903, however, the Frasch process proved effective in tapping rich masses along the United States Gulf Coast. Designed for marshy land where mine shafts could not be dug, it is now being applied to mining under the sea.

At Grand Isle, seven miles from the nearest land (see map), clanging machines are driving foundation pipes through 50 feet of water and into the floor of the Gulf of Mexico.

They are fashioning an artificial island almost a mile long, believed to be the largest in the world. Shaped like the letter Y (see drawing below) the island will support three drilling rigs, a sea water heating plant, warehouse, air compressors, electric generators, and living quarters

Deer daintily browse. Deep in the Enchanted Valley the largest remaining herds of Roosevelt elk move warily across snowy slopes (above).

To preserve these rare and handsome animals conservationist President Theodore Roosevelt declared the park a sanctuary. In 1953, a 50-mile-long, mile-wide swath of picturesque Pacific coast was added. Visitors dig succulent clams along the sandy beaches (below).

Under attack from lumber interests that want to chop and sell its beauty, the park has attracted staunch supporters. One of the million vacationers who enjoyed its peace last year declared: "The enjoyment of a virgin forest or a scenic view is 'use' just as much as is the cutting of trees for the lumber they produce." E.S.

ERIC WAHLEEN

UMI

Olympic Wilderness

Variety Spices Pacific Park

A MIGHTY MOUNTAIN juts from the wilderness, towering above its snow-capped brothers. To the English navigator John Meares, who sighted it in 1788, the cloud-clad peak was a home befitting the ancient gods. He named it Mount Olympus.

No Greek deities dwell there; only the merciless powers of ice and snow, wind and rain. But like the Needles (right), it is encircled with beauty fit for a god: alpine meadows aglow with purple-blue lupines, yellow glacial lilies, and orange-red Indian paintbrushes. Farther down the slopes, moss-draped branches filter the sunlight in a rain forest as wild and primeval as any in the world.

This little-explored refuge is set aside for public enjoyment as Olympic National Park. It sprawls over almost 900,000 acres of the northwest thumb of Washington State—only 40 miles from the whirling traffic of Seattle.

PHOTOGRAPHS BY PAUL A. ZAHL, NATIONAL GEOGRAPHIC STAFF

Roads do not cross the park. The Olympic Highway almost encircles it, but sends only a few short spurs, like broken spokes, toward the center. To penetrate this wilderness, adventurers travel horseback or walk rugged trails.

Olympic National Park was created to preserve the most luxuriant woodland in North America. Pacific winds bring twelve feet of rain a year to shower on the western slopes of the peninsula. Dense stands of trees blanket most of the park below 5,000 feet.

Among the forest patriarchs are the world's largest Sitka spruce, Douglas fir, western hemlock, and western red cedar, the latter 66 feet in circumference.

Impressive as these old trees are, they do not dominate the forest scene. Naturalist Paul A. Zahl, *National Geographic Magazine* staff writer who lived nearly three months in a log cabin deep in the forest, wrote:

"What holds one, rather, is the profusion of less towering species—understories of big leaf maples, vine maples, ferns, lichens, fungi . . .

"Perhaps above all, it is the club mosses hanging from nearly every branch, covering nearly every surface, in trailing strands and great sweeping tufts like the magnified beards of invisible elves and hobgoblins, that set the ominous and mysterious key of the rain forest" (bottom left).

Now and then a cougar soprano or an owl baritone breaks the deep silence.

PAUL A. ZAHL, NATIONAL GEOGRAPHIC STAFF

GIANT CONIFERS dwarf hikers deep in the rain forest of Olympic National Park —the wettest region in the continental United States. Mosses drape trunks and branches while shrubs carpet the forest floor.

Few visitors wander far off the trail. Beneath their feet harmless black beetles (right) roam across moss and matchstick lichens.

UMI